CASE STUDY

Saft lithium-ion battery power for BAE Systems' Talisman autonomous underwater vehicle

Li-ion batteries provide optimal performance and endurance for versatile new generation of undersea defence vehicle

Saft has been chosen by BAE Systems to supply lithium-ion batteries for its Talisman 'M' autonomous underwater vehicle (AUV). The vehicle was unveiled in 2007 and is designed to meet the growing demand from navies for independent vehicles that can undertake a variety of often dangerous tasks, including dealing with mines.

Talisman 'M' is approximately 4.5 m long by 1.7 m wide, weighs around 1,000 kg, can carry payloads of 500 kg or more and can operateat depths of up to 300 m. Propulsion and manoeuvre control is provided by four Seaeye SMS ducted-fan thrusters which drive it at speeds up to 5 knots. The thrusters enable it to hover, move vertically and turn in its own length. The vehicle is designed to operate with a high degree of accuracy throughout its autonomous missions.

Each Talisman 'M' vehicle is equipped with two or four battery pods, depending on its application. Li-ion is the preferred technology because of its fast charge times, high energy capacity, excellent power/volume ratio and its long service life without maintenance.

As a recognized world leader in advanced battery systems, Saft is an existing supply partner of BAE Systems. Among other contracts it supplies batteries for the company's Sting Ray torpedo.

High performance

In its basic configuration, Saft's lithium-ion power system can deliver up to 24 hours of continuous performance to the Talisman. In a recent development the batteries can be recharged on the surface by an integral miniature 3hp diesel engine, extending its range and performance significantly.

Each of the 320 V - 45 Ah batteries, used on the Talisman 'M', will be made up of Saft VL45E cells. Each battery has an integrated management system which equalizes the charging process across the cells and provides safety monitoring and security. It also feeds battery data to the vehicle's main on-board computer.

Saft's VL45E Li-ion cells are specifically designed to provide high performance from a compact lightweight unit.

Highlighting the importance of Talisman to the development of intelligent autonomy in the defence sector, especially in carrying out dangerous missions, Andy Tonge, Talisman project manager at BAE Systems (Underwater Systems) Maritime Autonomy Group says: "Talisman 'M' can perform the type of dangerous roles currently carried out by service men and women throughout the world – locate, identify and neutralize mines in one single mission."

The supply of reliable, proven battery technology from Saft is central to the fulfillment of Talisman's role in the fast-developing 'new defence' sector in which autonomous vehicles will play an important part.

BAE Systems is aiming its Talisman 'M' vehicle at global markets.

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